# MIRAGE
COMMUNICATIONS EQUIPMENT

## INSTRUCTION MANUAL

# A-1015-G 6 Meter R.F. Amplifier

Mirage Communications
921 Hwy 25 South
(601) 323-8287

**CAUTION**: Read All Instructions Before Operating Equipment!

# *WARNING !*

## IMPORTANT NOTICE

FCC type acceptance requirments prohibit sales of amplifiers operating below 144 MHz with internal RF sening circuits that place the amplifier in a transmit mode. Because of those rules. this amplifier is not shipped with an internal RF activated relay system.

You are, as a licensed amateur radio operator, allowed to make those modifications yourself.

**DO NOT** connect this amplifier to a radio without connecting an external control line for the internal relays. If the pre-amplifer is turned on, and transmitter power is applied without an external relay control line, pre-amplifier will be damaged.

If you have any questions about the operation of this amplifier, contact Mirage at (601) 323-8287 before attempting to use this amplifier.

# A-1015-G

The Mirage A-1015-G is the next generation of Power Amplifiers for 6 meters. New features make it the most useful and versatile amplifier available. Features include automatic power shut-down circuitry for protection against high antenna VSWR, high temperature and excessive R.F. power input. A newly designed GaAsFET receive pre-amp provides high gain and low-noise amplification for weak signal applications. The pre-amp includes an attenuator to reduce signal output level. This is useful in preventing Receiver Overload and subsequent Intermodulation Distortion caused by strong signals. Provisions are made for automatic or remote (external) keying, and for remote control of all front panel functions using the Mirage/KLM RC-1 Remote Control Unit. The Mirage A-1015-G is capable of FM, SSB, and CW operational modes.

## SPECIFICATIONS

| | |
|---|---|
| Frequency Range | 50 to 54 MHz |
| R.F. input power (Drive) | 1.0 to 15 Watts |
| R.F. output power | 150 Watts with 10 Watts drive |
| Duty Cycle | Intermittent (ICAS) |
| Modes | FM, SSB, CW |
| Receive Pre-amp | GaAsFET, Gain 21/15 dB-Nominal.<br>Noise figure less than 0.6 dB.<br>1 dB compression point greater<br>than -13 dBm input (Nominal). |
| VSWR Power Shut-down point | 3:1 approximately |
| R.F. input Power Shut-down point | 18 Watts Nominal |
| Temperature Power Shut-down point | 175 Degrees F. |
| Keying | Automatic (R.F. sensing) or remote (external). |
| Input/Output Impedance | 50 ohms |
| R.F. connectors | SO-239 (UHF) |
| Remote keying connector | RCA phono |
| Remote control connector | 6 pin Molex |
| Supply voltage | 13.8 VDC (for full R.F. power output) |
| Supply current | 18-22 amps (nominal) |
| Fuse | Low voltage, fast blow |
| Physical Dimensions | 12 x 3 x 5 1/2 inches |
| Type acceptance | Type acceptance under FCC Rules, part 90 |

## INSTALLATION

The Mirage A-1015-G may be mounted using the brackets (supplied when request is returned via warranty card) or simply place in a convenient operating position. In either case, there must be adequate ventilation for the finned heat-sink. This generally means at least 1 inch clearance from the sink to any surrounding enclosure and an unobstructed flow from the front to the back of the heat-sink.

**CAUTION:** With extended use the heat sink becomes very hot. If it is necessary to extend the D.C. power leads use a minimum #8 gauge wire.

Use a minimum length of good quality 50 ohm cable between the radio and amplifier. The antenna system should have a VSWR of 1.5:1 or better for best performance. The receiving pre-amp gain is set to the high value at the factory. To switch minimum gain move the DIP switch located under the left side cover near the power supply that leads to the down position. The switch may be accessed through the fourth slot from the front on the right side using an appropriate small tool. If desired, the transmit relay hold-in (hang-time) may be adjusted by adjusting the potentiometer located behind the third slot from the amplifier. If external amplifier keying is desired, a switched ground connection must be provided to the center pin of the RCA phone jack.

## FRONT PANEL SWITCHES/LED'S

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|---|---|
| POWER ON/OFF SWITCH | Turns the D.C. power on or off. |
| CHANGE FROM SSB TO FM | Selects relay time delay for the mode of operation. The relay drop time is lengtened for the SSB mode of operation. The adjustment is accessible through the second or third slot on the left hand side behind the front panel. |
| PRE-AMP ON/OFF SWITCH | Turns Pre-Amp power on or off. |
| POWER LED | Indicates that D.C. power is applied. |
| PRE-AMP LED | Indicates that the pre-amp is turned on or off. |
| TX LED | Indicates that the pre-amp is turned on. |
| SWR/OVERLOAD LED | Indicates amplifier shutdown due to excessive VSWR, temperature, or R.F. drive power. |

## REAR PANEL CONNECTORS

| | |
|---|---|
| RADIO (SO-239) | R.F. input from radio. |
| ANT (SO-239) | R.F. output to antenna. |
| RCA phono (Unmarked) | Remote keying. |
| Molex (Unmarked) | Remote control. |

## INTERNAL ADJUSTMENTS:

SSB DELAY RESISTIVE POT ..... This allows the R.F. relay "hang-time" or delay to be adjusted to the time desired.

PRE-AMP ATTENUATOR SWITCH ..... Sets the pre-amp gain to full or reduced value.

INPUT VSWR AND OUTPUT POWER ..... These adjustments are also made at the factory and should not require field adjustment.

PRE-AMP TUNING ..... These adjustments are also made at the factory for best gain and noise figure performance. They should not require field adjustment.

## TROUBLESHOOTING

The Mirage A-1015-G is designed for long, trouble-free performance and should not require extensive troubleshooting in the field. Many causes of common malfunctions are eliminated by the built-in protective circuitry.

**Note:** In the event of automatic power shut-down, the amplifier must be turned off and the cause of shut-down determined and removed.

In case of difficulty, check the following before assuming amplifier malfunction:

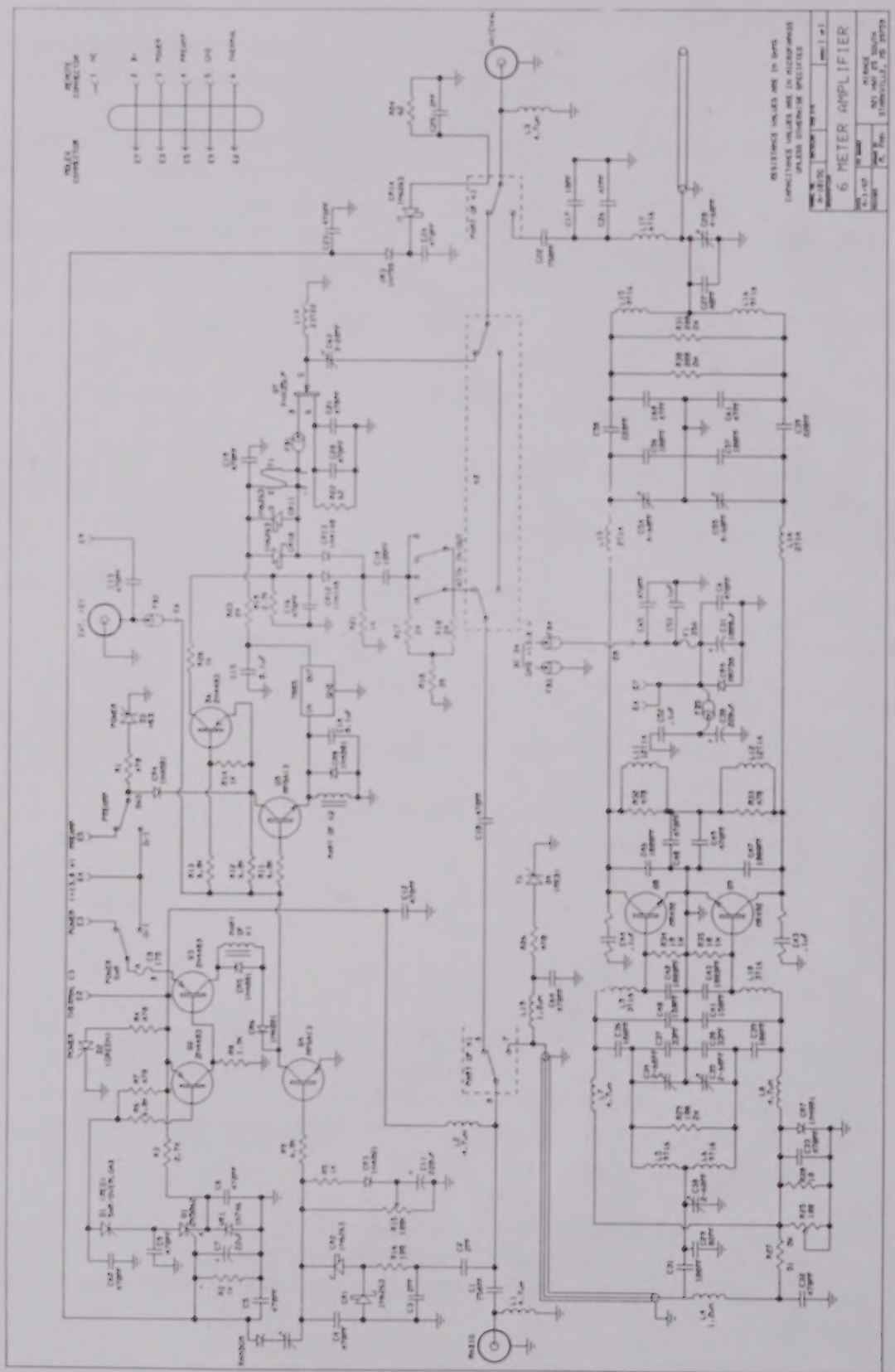
1.) Loose antenna and power supply connections.
2.) VSWR of antenna system.
3.) Coaxial cables from radio to amplifier, and amplifier to antenna.
4.) Output voltage of power supply.
5.) Power output of radio.
6.) Improper fuse rating.

## TECHNICAL ASSISTANCE

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual you may call MIRAGE at 601-323-8287. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by mail to MIRAGE, 921 HWY 25 South, Starkville, MS 39759 or by Fax to 601-323-6551. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.

## SCHEMATIC



MIRAGE
COMMUNICATIONS EQUIPMENT

921 Hwy 25 South
Starkville, MS 39759 USA
Tel: 601-323-8287
Fax: 601-323-6551

## ONE YEAR LIMITED WARRANTY

Any Mirage Communications product found to be defective in materials or workmanship will be repaired or replaced (at Mirage's option) for a period of one year from the date of original purchase.

During the warranty period Mirage Communications will provide, free of charge, both parts and labor necessary to correct defects in material or workmanship.

To obtain such warranty service, the original purchaser must:

**(1)** Provide "proof of purchase".
**(2)** Ship the product in its original container or equivalent, fully insured and shipping charges prepaid, to Mirage, as addressed below.

All internal adjustments are factory set for best performance consistent with reliable operation. Changing internal adjustments may void this warranty.

Improper maintenance or repair may also void this one year warranty. We recommend that units requiring repair during the warranty period be returned to the factory.

This unit was not designed for repeater operation, and its use in such service is at your own risk. Mirage assumes no responsibility for any item connected to or used in conjunction with this product.

The foregoing constitutes Mirage's entire obligation with respect to this product and the original purchaser and any user or owner shall have no remedy and no claim for incidental or consequential damages.

All Mirage products to be serviced, in-warranty or out-of-warranty, should be shipped, freight paid, to:

**Mirage**
**921 Hwy 25 South**
**Starkville, MS 39759 USA**

Product must be accompanied by a letter describing the problem in detail. **Be sure to include YOUR NAME, ADDRESS, AND TELEPHONE NUMBER!**

This warranty gives specific legal rights and you may also have other rights which vary from state to state.

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**WARNING:** This unit should not be operated with the cover removed. The cover confines RF radiation. The harmonic filters contained in the circuit will not suppress direct radiation that may result if the cover is removed.